

#8

PCT09

RAW SEQUENCE LISTING

DATE: 08/14/2001

PATENT APPLICATION: US/09/890,782

TIME: 10:55:50

Input Set : A:\PTO_VSK.txt

Output Set: N:\CRF3\08142001\I890782.raw

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3 <110> APPLICANT: Rijksuniversiteit Leiden
 5 <120> TITLE OF INVENTION: method of modulating metabolite biosynthesis in
 6 recombinant cells
 8 <130> FILE REFERENCE: BO 43339
 ofc--> 10 <140> CURRENT APPLICATION NUMBER: US/09/890,782
 c--> 11 <141> CURRENT FILING DATE: 2001-08-06
 13 <160> NUMBER OF SEQ ID NOS: 21
 15 <170> SOFTWARE: PatentIn Ver. 2.1
 17 <210> SEQ ID NO: 1
 18 <211> LENGTH: 1754
 19 <212> TYPE: DNA
 20 <213> ORGANISM: Catharanthus roseus
 22 <400> SEQUENCE: 1
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 24 ggaattacta aaatcggaag aagaaatcaa cgcgacgaaa gagaaaaaga acaaaagggt 120
 25 ttcgtttttg taaagtttga ttcttgccgg agattttcga caaaggagtg ggcaatttgt 180
 26 gcaatacttc tgagaaaatt gaaagagata caaggatggc tcttcttgat caggcatcca 240
 27 atttgagtc catgcctttt gatttcaacta gaaagaggaa gtcgaggagg agggatggta 300
 28 ctaagaacgt agcggagaca cttgcaaagt ggaaagagta taatgagaaa cttgatgctt 360
 29 tagatggagg gaaaccagct cggaagggtc ctgccaaaag atcaaaaaag ggatgtatga 420
 30 aaggtaaaag aggccctgag aattctcact gcaaatacag aggagttagg cagaggacat 480
 31 ggggtaaaag ggtggccgaa attcgggaac caaacagggg tagcaggctt tggttgggta 540
 32 cattcagaaa cgcgatagaa gctgcacttg cttatgatga agcagcgagg gcgatgtatg 600
 33 ggccttgtgc taggcttaat cttccgaact atagggcttc agaagaatct tcttccttgc 660
 34 caacaacatc aggatcagat acgactactg cttctggcat ctccagaggtc tctgtctatg 720
 35 aagacaaaaa gttcacacca gttgtttccg gattgaaaca agatgacaag ggtgaatcat 780
 36 tagagtcagc tgatagtaaa cctcaactcc tggctgatgc tggcactccc atgagtgcag 840
 37 tgaaggaaga accaaaagaa tatcaggtta tggattccca gtctgaaggg caattcggag 900
 38 acgaggaacc gcctagcaag cttgtttgta aagaagtcga ctttgggcag gatcaagctg 960
 39 ttgttcctgc tgtaaaaaat gctgaggaga tgggtggaga gatgggtgga gatatactga 1020
 40 aaggctgttc tttgtctgag atgtttgatg tggacgagtt gttgagcgtt ttagattcta 1080
 41 caccctcca tgccctcagat ttccagcatg gcatgggaaa tggtaatgta aaggcagagg 1140
 42 ctgcttacaa ctatgctcct tcatgggact cggccttcca gttgcagaat caagatccta 1200
 43 agctaggaag tcagcagcac atggcgcaga cccccccaga aattaattcc gggcttgatt 1260
 44 ttttgagccc aggaagacaa gaggactcct attttacttt gggatgacta gactttcttg 1320
 45 atttgggtgc tgaattggga ttgtaaatcc gaagttgttg aagctaaaag cggcgactat 1380
 46 gaaactggaa ttttggaaac gcttattggt cctgggtgtt gtcttagttc tagtctgttt 1440
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 48 ttttcttttt ttgtttttct gcagcgatgt atactaacat ctctactact aaaattacgt 1560
 49 ctcttcgtct tactaacag tagggtggag ctgattctct tttaagtttt tcagaagggg 1620
 50 aattcagcta tgagtttaga ggcagggtag tgtagttcag tgagcagatt ctttctgtag 1680
 51 atatctctag tcttttggtt tcttggaatg ttttttctgg tggataaag atggcatagg 1740
 52 tggaggttgt atct 1754
 55 <210> SEQ ID NO: 2
 56 <211> LENGTH: 885
 57 <212> TYPE: DNA
 58 <213> ORGANISM: Catharanthus roseus

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60 <400> SEQUENCE: 2

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61 caacaataat gtatcaatca aatgcccata attccgatca tctaacccttc ttaccacctt 60
62 tagtagatta tcaattcctc aacaacgatt ttgatttttc agaaatattt acagatttca 120
63 attacgctaa ttataattat aatacttcta cctcagataa tttctctggt tttcaattca 180
64 atgaaaattg cgaagaaatt atttcaccaa attatgcttc ggaagattta tcggatatta 240
65 ttttaacaga tatttttcaag gatcaggata attacgaaga cgaagtcggt gcgggagaac 300
66 aagaagaaga attaattacg acacctacct ctccgcgcgc cggcggcggc ggatgtgagc 360
67 agagatcgaa tgaggaatgg attaggtacc gtggcgtag acggcggcca tgggggaaat 420
68 tcgctgcgga aatcagggat cccaagagaa aaggatcgag gatatggttg ggaacttacg 480
69 agacggcgga agatgcggca ttagctttcg atcaagcggc gtttcaactc cgtggttcta 540
70 gagctaggtt aaattttccc aatcttattg gttctgctaa tgctccggtt agagtaagtc 600
71 ctacagcccg atcttcatcg tgtcatcttc gtctcaata atcctatcca cagttccatg 660
72 gggatagtaa attttttctt tgagtttttt agaagttata ttatctattg aaaaaataca 720
73 aaacattgca aatatTTTTT tagtacgtct ctatacttct ttttagtaat attcggatca 780
74 tgagcatggg gaagggtgata ttatccattg tcataaatta atagatacac tatcataaat 840
75 taatatgtac gaattacaag taaaatatag taagtgttaa tattg 885

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78 <210> SEQ ID NO: 3

79 <211> LENGTH: 792

80 <212> TYPE: DNA

81 <213> ORGANISM: Catharanthus roseus

83 <400> SEQUENCE: 3

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85 tccttaaatcg aagaacatct tctcagcgat aattctgatg attccagctc ggaattgact 120
86 tctacagagg aaaattggga agaaattttt gcagattttc taaattgggc gggatccgaa 180
87 atacagaaac gcggtagccc gagttccgaa agctgtcaat cgaattcaat ggcggaaagc 240
88 tgtcaggagg attctgttgt gggaaccccc ccagaagcgg cggccggagg aggttggtcg 300
89 aaggattgga accggtataa gggcgtaga cggcggccgt gggggaagtt cgcggcggag 360
90 ataagggatc cgaaaaagaa aggatccagg atttggttg gtacatacga gacacctgag 420
91 gatgcagcat tggttatga tgcagccgcg tttaatatgc gtggagctaa agctaggctt 480
92 aatttttctc atttgattgg ttccaatatt tccggaccgc ttagagtaaa cccgagaaaa 540
93 cgtttccctg cggagccttc tacgacgtcg tcgtttctt cttcttcttc gtctgaaaa 600
94 agtggaggaa ggaagaagag acgatattaa ttaattatta aaagtggagg attaaaaaaa 660
95 ttctgtgaaa tgagagatta ttacgtgggt tttgttaagc ccgataatcc ctcatgttaa 720
96 aattattaac ttcatcgatg ttctttttta aatctttgga atgtacaaaa ttttatatcc 780
97 aaaaaagtgc ac 792

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100 <210> SEQ ID NO: 4

101 <211> LENGTH: 376

102 <212> TYPE: PRT

103 <213> ORGANISM: Catharanthus roseus

105 <400> SEQUENCE: 4

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106 Met Ala Leu Leu Asp Gln Ala Ser Asn Leu Ser Pro Met Pro Phe Asp
107   1           5           10           15
109 Phe Thr Arg Lys Arg Lys Ser Arg Arg Arg Asp Gly Thr Lys Asn Val
110           20           25           30
112 Ala Glu Thr Leu Ala Lys Trp Lys Glu Tyr Asn Glu Lys Leu Asp Ala
113           35           40           45
115 Leu Asp Gly Gly Lys Pro Ala Arg Lys Val Pro Ala Lys Gly Ser Lys
116           50           55           60
118 Lys Gly Cys Met Lys Gly Lys Gly Gly Pro Glu Asn Ser His Cys Lys

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119 65          70          75          80
121 Tyr Arg Gly Val Arg Gln Arg Thr Trp Gly Lys Trp Val Ala Glu Ile
122          85          90          95
124 Arg Glu Pro Asn Arg Gly Ser Arg Leu Trp Leu Gly Thr Phe Arg Asn
125          100          105          110
127 Ala Ile Glu Ala Ala Leu Ala Tyr Asp Glu Ala Ala Arg Ala Met Tyr
128          115          120          125
130 Gly Pro Cys Ala Arg Leu Asn Leu Pro Asn Tyr Arg Ala Ser Glu Glu
131          130          135          140
133 Ser Ser Ser Leu Pro Thr Thr Ser Gly Ser Asp Thr Thr Thr Ala Ser
134 145          150          155          160
136 Gly Ile Ser Glu Val Ser Val Tyr Glu Asp Lys Lys Phe Thr Pro Val
137          165          170          175
139 Val Ser Gly Leu Lys Gln Asp Asp Lys Gly Glu Ser Leu Glu Ser Ala
140          180          185          190
142 Asp Ser Lys Pro Gln Leu Leu Val Asp Ala Gly Thr Pro Met Ser Ala
143          195          200          205
145 Val Lys Glu Glu Pro Lys Glu Tyr Gln Val Met Asp Ser Gln Ser Glu
146          210          215          220
148 Gly Gln Phe Gly Asp Glu Glu Pro Pro Ser Lys Leu Val Cys Lys Glu
149 225          230          235          240
151 Val Asp Phe Gly Gln Asp Gln Ala Val Val Pro Ala Val Lys Asn Ala
152          245          250          255
154 Glu Glu Met Gly Gly Glu Met Gly Gly Asp Ile Leu Lys Gly Cys Ser
155          260          265          270
157 Leu Ser Glu Met Phe Asp Val Asp Glu Leu Leu Ser Val Leu Asp Ser
158          275          280          285
160 Thr Pro Leu His Ala Ser Asp Phe Gln His Gly Met Gly Asn Gly Asn
161          290          295          300
163 Val Lys Ala Glu Ala Ala Tyr Asn Tyr Ala Pro Ser Trp Asp Ser Ala
164 305          310          315          320
166 Phe Gln Leu Gln Asn Gln Asp Pro Lys Leu Gly Ser Gln Gln His Met
167          325          330          335
169 Ala Gln Thr Pro Pro Glu Ile Asn Ser Gly Leu Asp Phe Leu Gln Pro
170          340          345          350
172 Gly Arg Gln Glu Asp Ser Tyr Phe Thr Leu Gly Asp Leu Asp Phe Leu
173          355          360          365
175 Asp Leu Gly Ala Glu Leu Gly Leu
176          370          375
180 <210> SEQ ID NO: 5
181 <211> LENGTH: 210
182 <212> TYPE: PRT
183 <213> ORGANISM: Catharanthus roseus
185 <400> SEQUENCE: 5
186 Met Tyr Gln Ser Asn Ala His Asn Ser Asp His Leu Thr Phe Leu Pro
187 1          5          10          15
189 Pro Leu Val Asp Tyr Gln Phe Leu Asn Asn Asp Phe Asp Phe Ser Glu
190          20          25          30
192 Ile Phe Thr Asp Phe Asn Tyr Ala Asn Tyr Asn Tyr Asn Thr Ser Thr

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193          35          40          45
195 Ser Asp Asn Phe Ser Gly Phe Gln Phe Asn Glu Asn Cys Glu Glu Ile
196          50          55          60
198 Ile Ser Pro Asn Tyr Ala Ser Glu Asp Leu Ser Asp Ile Ile Leu Thr
199 65          70          75          80
201 Asp Ile Phe Lys Asp Gln Asp Asn Tyr Glu Asp Glu Val Val Ala Gly
202          85          90          95
204 Glu Gln Glu Glu Glu Leu Ile Thr Thr Pro Thr Ser Arg Gly Gly Gly
205          100          105          110
207 Gly Gly Gly Cys Glu Gln Arg Ser Asn Glu Glu Trp Ile Arg Tyr Arg
208          115          120          125
210 Gly Val Arg Arg Arg Pro Trp Gly Lys Phe Ala Ala Glu Ile Arg Asp
211          130          135          140
213 Pro Lys Arg Lys Gly Ser Arg Ile Trp Leu Gly Thr Tyr Glu Thr Ala
214 145          150          155          160
216 Glu Asp Ala Ala Leu Ala Phe Asp Gln Ala Ala Phe Gln Leu Arg Gly
217          165          170          175
219 Ser Arg Ala Arg Leu Asn Phe Pro Asn Leu Ile Gly Ser Ala Asn Ala
220          180          185          190
222 Pro Val Arg Val Ser Pro Arg Arg Arg Ser Ser Ser Cys His Leu Arg
223          195          200          205
225 Pro Gln
226          210
230 <210> SEQ ID NO: 6
231 <211> LENGTH: 203
232 <212> TYPE: PRT
233 <213> ORGANISM: Catharanthus roseus
235 <400> SEQUENCE: 6
236 Met Ser Glu Glu Ile Ile Ser Val Ser Asp Arg Phe Leu Leu Ser Leu
237 1          5          10          15
239 Ile Glu Glu His Leu Leu Ser Asp Asn Ser Asp Asp Ser Ser Ser Glu
240          20          25          30
242 Leu Thr Ser Thr Glu Glu Asn Trp Glu Glu Ile Phe Ala Asp Phe Leu
243          35          40          45
245 Asn Trp Ser Gly Ser Glu Ile Gln Lys Arg Gly Ser Pro Ser Ser Glu
246          50          55          60
248 Ser Cys Gln Ser Asn Ser Met Ala Glu Ser Cys Gln Glu Asp Ser Val
249 65          70          75          80
251 Val Gly Thr Pro Pro Glu Ala Ala Ala Gly Gly Gly Cys Ser Lys Asp
252          85          90          95
254 Trp Asn Arg Tyr Lys Gly Val Arg Arg Arg Pro Trp Gly Lys Phe Ala
255          100          105          110
257 Ala Glu Ile Arg Asp Pro Lys Lys Lys Gly Ser Arg Ile Trp Leu Gly
258          115          120          125
260 Thr Tyr Glu Thr Pro Glu Asp Ala Ala Leu Ala Tyr Asp Ala Ala Ala
261          130          135          140
263 Phe Asn Met Arg Gly Ala Lys Ala Arg Leu Asn Phe Pro His Leu Ile
264 145          150          155          160
266 Gly Ser Asn Ile Ser Gly Pro Val Arg Val Asn Pro Arg Lys Arg Phe

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267          165          170          175
269 Pro Ala Glu Pro Ser Thr Thr Ser Ser Ser Ser Ser Ser Ser Ser
270          180          185          190
272 Glu Asn Ser Gly Gly Arg Lys Lys Arg Arg Tyr
273          195          200
277 <210> SEQ ID NO: 7
278 <211> LENGTH: 48
279 <212> TYPE: DNA
280 <213> ORGANISM: Catharanthus roseus
282 <400> SEQUENCE: 7
283 gtacatcact cttagaccgc cttctttgaa agtgatttcc cttggacc          48
286 <210> SEQ ID NO: 8
287 <211> LENGTH: 25
288 <212> TYPE: DNA
289 <213> ORGANISM: Artificial Sequence ✓
291 <220> FEATURE:
292 <223> OTHER INFORMATION: Description of Artificial Sequence: primer ✓
294 <400> SEQUENCE: 8
295 ccacgtggtt gtagtctctt agacc          25
298 <210> SEQ ID NO: 9
299 <211> LENGTH: 25
300 <212> TYPE: DNA
301 <213> ORGANISM: Artificial Sequence ✓
303 <220> FEATURE:
304 <223> OTHER INFORMATION: Description of Artificial Sequence: primer ✓
306 <400> SEQUENCE: 9
307 ggtacatcag agaatgaccg ccttc          25
310 <210> SEQ ID NO: 10
311 <211> LENGTH: 26
312 <212> TYPE: DNA
313 <213> ORGANISM: Artificial Sequence ✓
315 <220> FEATURE:
316 <223> OTHER INFORMATION: Description of Artificial Sequence: primer ✓
318 <400> SEQUENCE: 10
319 cactcttact ggcgcttctt tgaaag          26
322 <210> SEQ ID NO: 11
323 <211> LENGTH: 21
324 <212> TYPE: DNA
325 <213> ORGANISM: Artificial Sequence ✓
327 <220> FEATURE:
328 <223> OTHER INFORMATION: Description of Artificial Sequence: primer ✓
330 <400> SEQUENCE: 11
331 agaccgcgaa gaatgaaagt g          21
334 <210> SEQ ID NO: 12
335 <211> LENGTH: 29
336 <212> TYPE: DNA
337 <213> ORGANISM: Artificial Sequence ✓
339 <220> FEATURE:
340 <223> OTHER INFORMATION: Description of Artificial Sequence: primer ✓

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VERIFICATION SUMMARY

DATE: 08/14/2001

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L:10 M:270 C: Current Application Number differs, Replaced Current Application Number

L:11 M:271 C: Current Filing Date differs, Replaced Current Filing Date